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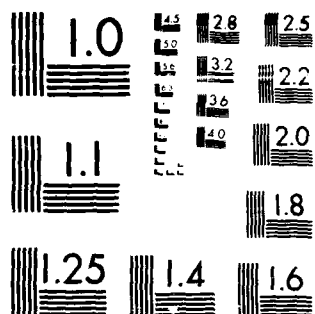
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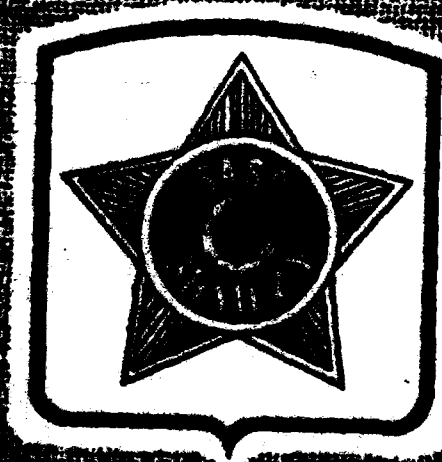
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SOVIET FUTURE WAR (Draft SASO Study)

A Note to the Reader

The appended materials are part of a larger effort aimed at affording a perspective on how the Soviets approach the study of future war (budushchaia voina). The intent is to provide the reader with a sense of context and methodology in viewing Soviet conceptions. Because this study is in draft form, it remains subject to revision, expansion, and updating as new materials are incorporated into what is an evolving project.

The heart of this study is the section on "The Future Development of the Soviet Army: Weaponry, Doctrine, and Organization." However, the reader is cautioned against skipping immediately to this section without reading the accompanying materials, the purpose of which is to serve as a contextual framework, or to establish the "How" that stands behind the "What."

The contents of this draft study include the following materials:

- "The Methodology of Foresight and Forecasting in Soviet Military Affairs," (24 pp.)
- "Impact of the Dialectical Process: Periods of Military Development," (14 pp.)
- "The Future Development of the Soviet Army: Weaponry, Doctrine, and ^{Method} Organizations," (11 pp.)
- ~~SASO Translation~~ → "Foresight" and "Forecasting" from the Soviet Military Encyclopedia, (7 pp.)
- ~~SASO Translation~~ → "Anticipated Directions for Change in Tactics of Ground Troops" from the Polish Ground Forces Review, (7 pp.)

THE METHODOLOGY OF FORESIGHT AND FORECASTING
IN SOVIET MILITARY AFFAIRS

To address the question of Soviet military development over the next three or four decades, the Soviet Army Studies Office has modified its own approach to borrow from Soviet exercises in military foresight and forecasting. The starting point for any such excursion is ideology because Marxism-Leninism forms the prism through which all trends are filtered and analyzed.¹ The most critical element of the ideology remains its commitment to change the world. For the adherents, it is not enough to understand trends; one must struggle to shift them in favor of socialism. Ideology tolerates no contradiction between objectivity and partisanship (partiinost').

A second critical element of the ideology is its emphasis upon dialectical materialism as a concept fundamental to an analysis of all trends. To begin with, Marxist-Leninist philosophy posits the existence of a reality whose ultimate essence flows from matter, not idea. The point of departure, then, is philosophical materialism, which defines things in the objective world in general and the relationship of human society to them in particular. As an integral part of the overall unifying vision, the notion of the dialectic stresses both cohesiveness and constant change. All phenomena are interconnected, and all are inter-dependent. Moreover, phenomena interact as parts of a totality, changing along lines of

¹ V. K. Konoplev, Nauchnoe predvidenie v voennom dele (Moscow: Voenizdat, 1974), 127.

progression and reaction to progression which give rise to still more contending lines of progression. It is this contention, or "interpenetration of opposites," that Marxist-Leninists label the dialectic.

It is also this vision of changing reality that establishes the intellectual perspective from which various aspects of the physical and social world are understood. Empirical data, that is, information derived from the senses, can be correctly interpreted only within the context of the inter-relationships flowing from dialectical materialism. For example, the future development of the military can be understood only within the context of trends (or contending lines of progression) affecting economic, social, political, scientific, and technical developments in general and within the two competing world social systems (capitalism and socialism) in particular. These two systems are in turn dominated by the nature of their class relations, which both shape each system's consciousness and mold its institutions. By extension into the realm of the military, dialectical materialism serves as the conceptual basis for a system of laws of military science, which find their expression in Marxism-Leninist teachings about war and the army.²

One of the more basic assumptions engendered in the dialectic and its various social manifestations is the idea that

² V. Morozov and S. Tyushkevich, "On the System of Laws of Military Science and the Principles of Military Art," Voennaia mysl', No. 3 (March 1967), 17.

war is a continuation of politics, i. e., class politics, by other, i. e., violent, means. Class struggle can assume the form of overt conflict in a systemic war between capitalism and socialism. Or, as is more probable, class struggle can assume the form of overt and/or covert conflict in local wars either of national liberation or protection of a socialist state from internal counter-revolution and capitalist intervention. Within the general scheme, defense of the Soviet Union and the Socialist Commonwealth remains the most fundamental mission of the Soviet and Warsaw Treaty Forces. Conceptions of warfighting capabilities thus go hand-in-hand with a political strategy designed to enhance Bloc security, undermine NATO solidarity, neutralize the political will of some NATO members, and avoid the onset of hostilities. At the same time, the rise of "chauvinistic nationalism" in the People's Republic of China creates a need to assess the content, direction, and long-range stability of that power's anti-Soviet entente with the leading capitalist powers. Always the Soviet military forecaster must prudently balance his attention between that which is potentially more decisive and that which is more probable, the latter category including conflict in the Third World.³

For the Soviet military forecaster, as for any forecaster operating with reference to Marxism-Leninism, there are three specific "laws" of the dialectic which must be applied to any

³ E. Rybkin, "Marksizm-Leninizm kak metodologicheskaya osnova dlia prognozirovaniia voennykh sobytii," Voenno-istoricheskii zhurnal, No. 7 (July 1980), 3-10.

exercise in foresight (predvidenie).⁴ Foresight is not prediction [predskazenie], for prediction implies a determined outcome without requiring any action by the subject. Foresight, on the contrary, is a tool or weapon used by the subject to act upon the objective world. "The capacity to engage in foresight is the most important quality of military cadres."⁵ Foresight is not easy in military affairs where random events abound and where the commander must constantly confront the vexing problem of inadequate information about the enemy, his forces, capabilities, and intentions. The "laws" of dialectical materialism do not negate these problems but, rather provide a method for dealing with uncertainties. In a struggle with an adversary who approaches foresight strictly on an intuitive basis, these laws are supposed to provide a relative advantage in application. The application of the laws is founded upon concrete historical analysis and is akin to the etudes [etiudy] of a chess master, who uses such exercises to sharpen his ability to see five and more moves in advance in order to link together his opening

⁴ The Soviet literature on forecasting is quite extensive. Relevant works on the role of ideology in social, economic, political, scientific, and technological forecasting include: I. V. Bestuzhev-Lada, Okno v budushchee (Moscow: Mysl', 1970); D. M. Gvishiani, "Dialektiko-materialisticheskii fundament sistemnykh issledovaniy," in Filosofskie aspekty sistemnykh issledovaniy: Trudy filosofskogo metodologicheskogo seminara (Moscow: VNIISI, 1980), 3-8; and D. M. Gvishiani, ed., Nauchno-tekhnicheskii progress: Programmnyi podkhod (Moscow: Mysl', 1981).

⁵ Voennyi entsiklopedicheskii slovar' (Moscow: Voenizdat, 1983), 585.

moves, middle, and end game into a complete whole.⁶

The first of the laws of dialectical materialism is the law of the unity and struggle of opposites, which characterizes the very causes of development. In military affairs this law finds its expression in the constant tension and mutual interaction of means of attack and defense upon one another.⁷ The well-known struggle between naval artillery and armor would be a prime example of this law at work, as would be the contemporary struggle between tanks and PGMs. It also finds its expression in the Soviet approach to forms of conflict. Thus, in the early 1930s leading Soviet military theorists-practitioners, including A. S. Bubnov, S. S. Kamanev, M. N. Tukhachevsky, and R. P. Eideman, explored the relationship between guerrilla warfare and conventional warfare as a burning issues of military theory:

Partisan warfare during the Civil War often assumed a completely independent significance. One can count on the fact that warfare of such a type in future European class wars and in the national-liberation wars of the nations of the East will become the perfect fellow-traveler of regular warfare. Because of this one of the immediate tasks for theoretical work of our military-scientific theory is: the study of the nature of modern "partisan warfare" and the establishment of a forecast

⁶ Webster's Ninth New Collegiate Dictionary defines etude as study or a piece of music for the practice of a point of technique. In Russian etiud (etude) applies to both music and chess. Thus, Triandafillov gave his essay on tactical aspects of the Perekop-Chongar Operation of 1920 the subtitle of takticheskii etiud [tactical study], thereby making the link between chess and foresight. See: V. Triandafillov, "Perkopskaia operatsiia, (takticheskii etiud)," A. S. Bubnov, S. S. Kamenev, and R. P. Eideman, eds., Grazhdanskaia voina, 1918-1921 3 volumes (Moscow: Voennyi Vestnik, 1928-1930), I., 339-357.

⁷ Konoplev, Nauchnoe predvidenie v voennom dele, 68-70.

for the future.⁵

The second law is that of quantitative to qualitative change, which attempts to describe the effect produced by a series of incremental (quantitative) changes gradually accumulating to cause a sudden (qualitative) breakthrough. This law warns the Soviet analyst to avoid extrapolations along simple trend lines and directs him instead to look for points at which sufficient quantity will bring about a qualitative shift. Or to put matters bluntly in relation to military technology, a few tanks do not make for mechanized warfare. The Soviet forecaster must look for those developments which promise qualitative leaps and provide an assessment of when they might be expected. This is one area in which mathematical methods (operations research) have been applied since the late 1950s.⁶

The third law of the dialectic is the negation of the

⁵ A. S. Bubnov, S. S. Kamenev, M. N. Tukhachevskii, and R. I. Eideman, eds., Grazhdanskaia voina, 1918-1921: Operativno-strategicheskii ocherk boevykh deistvii Krasnoi armii (Moscow: Gosizdat, Otdel Voennoi Literatury, 1928-1930), 18. This did not remain idle intellectual speculation, but during the 1930s was closely tied to the study of the local wars of the period, including the Italo-Ethiopian War, Spanish Civil War and the Sino-Japanese War. Thus, during the Sino-Japanese War, in which Soviet officers served as advisors to the Chinese forces, the application of guerrilla tactics by the 8th Route Army of the Chinese Communist Party, merited serious attention. In 1939 N. Argunov published an article in which he outlined the development of partisan warfare, addressed its impact on the Sino-Japanese conflict, and called attention to the ten basic rules of partisan tactics which had been worked out on the basis of the 8th Route Army's experience. See: N. Argunov, "Partizanskaia voina," Voennaia mysl', III, No. 6, 78-81.

⁶ S. I. Krupnov, Dialektika i voennaia nauka (Moscow: Voenizdat, 1963), 100-126.

negation. Development never proceeds in a straight line. One trend (thesis) as it asserts itself is the dominant one, leading to the emergence of a counter-trend (antithesis) which negates the first, leading in turn to a final negation of the negation and a new trend (synthesis).¹⁰ Accordingly, the development of rifled weapons radically transformed infantry tactics and negated smoothbore muskets and field guns. However, new breakthroughs in technology led to the development of a whole range of rocket weapons, which, in turn, replaced rifled weapons in a number of combat arms. No weapons system or combat arm is ever seen as definitively decisive but is viewed as but one more aspect within the inter-connected process (or continuum) of development. In 1982, Marshal N. V. Ogarkov, then-Chief of the Soviet General Staff, applied the law of the negation of the negation to his analysis of current trends in the development of military art and the force structure of the Soviet military. He identified this very process at work in the development of aerial anti-tank weapons.¹¹

A third critical element of the Marxist-Leninist approach to foresight is the strict canon that while theory must inform praxis, praxis, i. e. practical application, can and must inform theory. As major General V. K. Konoplev observed, "praxis [praktika] is the basis and motive force of foresight." Since

¹⁰ I. A. Grudin, Dialektika i sovremennoe voennoe delo (Moscow: Voenizdat, 1971), 6ff.

¹¹ N. V. Ogarkov, Vsegda v gotovnosti k zashchite otechestva (Moscow: Voenizdat, 1982), 41-45.

the evaluation of all praxis must by its nature involve historical research, the emphasis is upon a method to find and analyze past phenomena in search of trends--but inside an existing theory. The theory can and must be adapted to new circumstances, but it cannot be consigned to an irrelevant role. Under military praxis Konoplev lists: "the production of weapons and equipment, combat and political preparation, training and education of military personnel and finally, what is the main element -- armed struggle."¹²

As early as 1929, as part of their effort to infuse Marxism-Leninism into military science, Soviet military analysts had begun to incorporate the analytical concept of future war [budushchaia voina] into their efforts at foresight in military affairs. One of the first such works was V. K. Triandafillov's The Nature of the Operations of Contemporary Armies, which became both a basic work in the development of Soviet theory of operational art and a model for the method of engaging in foresight in military affairs.¹³ Triandafillov's contribution to Soviet military theory was substantial, but his work should not be viewed in isolation. Like Newton, he stood on the shoulders of others.

Triandafillov's approach deserves substantial attention

¹² Konoplev, Nauchnoe predvidenie v voennom dele, 6, 13.

¹³ V. K. Triandafillov, Kharakter operatsii sovremennykh armii (Moscow: Gosvoenizdat, 1929), and Sovetskaia voennaia entsiklopediia, 2 vols. incomplete (Moscow: Gosudarstvennoe Slovarno-Entsiklopedicheskoe Izdatel'stvo, 1933), II, cols. 843-844.

because of both its content and impact. His book begins with a treatment of technological developments in the decade following World War I beginning with infantry weapons and moving on to artillery, chemical weapons, tanks, communications and engineering support, and aviation. He examines not only the current status of such weapons but also the foreseeable trends in their further development. Triandafillov then turns to the most burning question of the day: whether future armies would be small, professional, mechanized forces or million-man, mass armies. On the basis of an analysis of capitalist societies, he concluded that mass, mechanized armies would dominate future battlefields. Writing in the late 1920s, he divided Europe into two military spheres, i. e., the Western advanced capitalist zone and the Eastern underdeveloped zone, in which he included the Soviet Union. In the West, mass, mechanized warfare was already possible, but in the East underdevelopment of the various national economies meant that their armies were based on a "peasant rear." In the East, mechanization would be an addendum to traditional armies so long as the level of economic development precluded effective mechanization of these armed forces. Experiments with small mechanized units to enhance the combat capabilities of the various combat arms were foreseen, as in the case of adding light tanks and armored cars to strategic cavalry.¹⁴ Based on these assumptions, Triandafillov addressed

¹⁴ Triandafillov, Kharakter operatsii sovremennykh armii, 70-72.

the problems of mobilization and sustainment. He concluded the first section of his book by turning his attention to force structure and addressing the problem of combined arms and the logistical support of a modern army in the field.

Having set the context, he now shifted his focus to the content of the operations of modern armies. Here he defined the densities of various forces during deployment and initial phase of an operation. In his discussion of the operation itself, Triandafillov assumed a need to achieve sufficient forces to secure a breakthrough of a prepared defense and to sustain an advance into the depths of the enemy position. He posited various norms, i. e., densities of men and fire, to accomplish these tasks, i. e., penetration, breakthrough, exploitation, and pursuit and identified the objective limitations, which affected the conduct of such deep operations. This led him to the conclusion that no single operation could be decisive and that strategic victory would go to the force which could conduct a series of successive operations, tied together by a coherent design. The question of integrating tactical engagements into operational successes and operational successes into strategic victory led him to address in detail two other problems associated with the operational level of war, i. e., troop control and logistic capabilities.¹⁵

Triandafillov embodied the essence of Soviet military science's approach to foresight in military affairs during one of

¹⁵ Ibid., passim.

its most dynamic and innovative periods. Crucial to this approach was the incorporation of an explicit assessment of the international correlation of forces and trends in its development. Soviet analysts assumed and still assume an on-going systemic conflict between the socialist and capitalist systems. The Soviets have, however, shifted focus within their analysis of the likelihood of armed struggle. In the late 1920s Triandafillov asserted that the central military threat to the USSR came from underdeveloped successor states in Eastern Europe which bordered on the Soviet Union. French military assistance to such states was assumed, but their low level of development radically limited their ability to absorb modern weapons. By the early 1930s Triandafillov was revising his work to postulate a direct conflict with major capitalist powers as a result of the Great Depression, increased instability in the capitalist system, and a more overtly anti-Soviet policy on the part of a number of major states.¹⁶ By the mid-1930s Soviet military forecasters were agreed that Nazi Germany and imperial Japan had become the chief threats to the USSR. According to M. V. Zakharov, Marshal B. M. Shaposhnikov, who served as Chief of the Soviet General Staff during the late 1930s, revised the threat estimate for the Third Five Year Plan to address this issue.¹⁷ In the immediate post-World War II period, Soviet threat assessments could focus

¹⁶ Ibid., 3rd Edition (1937), 234-235.

¹⁷ M. V. Zakharov, "On the Eve of World War II (May 1938-September 1939)," Soviet Studies in History, XXXIII, No. 3 (Winter 1984-1985), 87-121.

on a single major capitalist opponent and its network of alliances. For a time, the relative stability of the political-military side of the doctrinal equation seemed to make some aspects of foresight and forecasting relatively simple. However, after 1953, changing perceptions of rapid progress in science and technology, which the Soviets have termed the scientific-technical revolution, seemed to call for a drastic revision of some of the more traditional assumptions underlying forecasting.

The traditional approach owed its origins to the first three decades of Soviet military history, when scientific discoveries had led to new technologies which initially had only immediate tactical application. Only mass production and tactical innovation could endow such "leaps" with operational impact. In the 1920s, A. A. Svechin, the first Soviet author to address the problem of strategy in a comprehensive fashion, distinguished between technological surprise, which was a near impossibility to achieve, and the critical struggle for the technological initiative.¹⁹ Svechin proposed both an active program of technological intelligence to study all foreign developments with military ramifications and the concealment of one's own weapons development programs until such new weapons had been thoroughly integrated into army tactics and were available in large masses so that they would have a capital impact on the course and outcome of their combat employment. The emphasis was upon

¹⁹ A. A. Svechin, Strategiia, 2nd Edition (Moscow: Voennyi Vestnik, 1927), 68-70.

combined arms application and the achievement of operational results through a combination of new means and methods on a massive scale, quite unexpected by the opponent. Operational techniques included a wide range of approaches to the echeloning of forces depending upon an operation's objective, the availability of forces and means for the offensive, the nature of the enemy's defense, the time available for the planning and execution of the operation, and the terrain. Operational planning relied upon maskirovka both to conceal the effort and deceive the enemy and demanded from Soviet commanders creativity to avoid stereotypical solutions which would reveal to the enemy the scope, scale and/or timing of the operation.

With some success, this framework governed the Soviet approach to the problem of technological initiative both before and during the Great Patriotic War. Stalinist industrialization had simultaneously sustained an impressive program of weapons development and permitted the Soviet military to seek both mass and mobility. The struggle for the technological initiative at the tactical level thus became linked to the problem of achieving surprise at the operational level of war.¹⁹ A well-developed and coherent series of operational successes throughout the depth of the enemy's defenses became the acknowledged path to strategic victory.

¹⁹ M. M. Kir'ian (ed.), Vnezapnost' v nastupatel'nykh operatsiiakh Velikoi Otechestvennoi voyny (Moscow: Nauka, 1986), 86-102.

All this held true until the 1950s, when nuclear weapons and modern delivery systems, i. e., ballistic missiles, seemed to negate time-proven perception and process. After the death of Stalin in 1953, the Soviets found themselves standing military affairs on its head in assessing a military-scientific revolution which was having an immediate and profound impact at the strategic level. This was the basic line taken by the initial (1962) edition of Marshal V. D. Sokolovsky's Military Strategy.²⁰ Nuclear-rocket weapons not only led to the emergence of new branches of the armed forces but also recast the content and significance of certain basic analytical categories of military science and art, including concentration of forces in the decisive direction, economy of force, partial victory, strategic deployment, the strategic offensive, strategic defense, and strategic maneuver. In 1964, Major General S. Kozlov saw these changes from the perspective of the military foresight and forecasting process:

Soviet military science has discerned all these new phenomena of armed struggle. It has defined the essence of the deeply revolutionary processes, which are taking place in military affairs; it has researched and evaluated the conditions under which they inevitably appear. As a result, it has been able to give a coherent, scientifically-based concept of the character of modern war, which is, as opposed to what happened in the past, based not so much on the experience of past wars, as on scientific foresight and

²⁰ V. D. Sokolovsky (ed.), Voennaia strategiiia, 1st Edition (Moscow: Voenizdat, 1962).

a forecast of a possible future.²¹

Explicit in Major General Kozlov's analysis of the dominant combat arms in a "nuclear-rocket war," was a vision of future armed conflict which either negated the significance of past combat experience or rendered it largely irrelevant under the new conditions.²² During the 1960s, the one-sidedness of such analysis was a subject of intense ferment within the Soviet military, and explained, in part, why Sokolovsky's Military Strategy went through three editions in six years. Some of the ferment was probably also the result of shifts in US and NATO doctrine towards "flexible response" with its search for viable alternatives to massive retaliation.²³

At the same time, the Soviet debate was also driven by the need to re-estimate the impact of nuclear weapons on the whole range of conflicts which could be understood under the rubric of "future war." On the one hand, the quantitative growth of the nuclear arsenals of the two superpowers and the arsenals' continual qualitative modernization within less than two decades created a situation which negated the mass use of such weapons by

²¹ S. Kozlov, "K voprosu o razvitii sovetskoi voennoi nauki posle vtoroi mirovoi voiny," Voennaia mysl', No. 2 (February 1964), 64.

²² Ibid., 65.

²³ P. G. Bogdanov, M. A. Mil'stein, and L. S. Semeiko (eds.), SShA: Voenno-strategicheskie konseptsii (Moscow: Voenizdat, 1980), 51-52; and S. A. Tiushkevich, Filosofiia i voennaia teoriia (Moscow: Nauka, 1975), 182-183.

threatening both sides with "catastrophic consequences." On the other hand, the simultaneous modernization of conventional armaments, which included the development of precision guided munitions, having a destruction power corresponding to small nuclear weapons, again raised the prospect of fighting a relatively long war with conventional weapons.²⁴

Over the last decade or so, the reversion to a conventional theater-strategic option should be understood as a true "negation of the negation." As Colonel General M. A. Gareev has pointed out, the revitalization of such categories as massing of forces and means on the main direction, strategic deployment, and mobilization has been infused with a new content. Within this process we can discern two conflicting sources of praxis by which to assess the direction of the development of military art. On the one hand, the scope and scale of theater-strategic operations have made the experience of the Great Patriotic War relevant to a host of problems associated with operational art and troop control. On the other hand, the actual use of modern conventional weapons systems such as PGMs, airmobile forces, air defense weapons, and electronic warfare in "local wars" has made such conflicts a particularly vital topic for study in forecasting changes in the nature of warfare.²⁵ As Marshal S. F.

²⁴ M. A. Gareev, M. V. Frunze - voennyi teoretik (Moscow: Voenizdat, 1985), 239-243.

²⁵ I. Shavrov and M. Galkin, (eds.), Lokal'nye voyny: Istoriia i sovremennost' (Moscow: Voenizdat, 1980). For a discussion of this analytical process in action see: Jacob. W. Kipp, Naval Art and the Prism of Contemporaneity (College

Akhromeev, current Chief of the General Staff, has noted, "One must remember that changes in the nature of wars now take place more rapidly and this means that our reaction to these changes, to the demands of Soviet military art and to the structure of the Armed Forces must be more energetic."²⁶

Soviet and Warsaw Pact military specialists have addressed the problem of adapting forecasting techniques to the process of foresight in military affairs. In their approach these authors have looked to mathematical modeling to assist them in weapons development, force structuring and the perfection of the means and methods of armed struggle.²⁷ In the late 1960s, Marshal Sokolovsky and Major General M. Cherednichenko addressed the problem of evaluating and forecasting the impact of economic and scientific-technical capabilities on the development of weapons systems. The authors made three related points: first, they noted the long lead time required for the research and development of modern weapons systems, which they estimated at 10-15 years. Second, they called attention to the relatively short time span over which a new weapons system had its optimal effectiveness, which they estimated at 5-7 years. Third, the

Station, Texas: Center for Strategic Technology Stratech Papers, 1984).

²⁶ S. F. Akhromeev, "Rol' Sovetskogo Soiuza i ego Vooruzhennykh Sil v dostizheniia koren'nogo pereloma vo vtoroi mirovoi voine i ego mezhdunarodnoe znachenie," Voenno-istoricheskii zhurnal, No. 2 (February 1984), 24.

²⁷ I. E. Shavrov and M. A. Galkin, eds., Metodologiya voenno-nauchnogo poznaniia (Moscow: Voenizdat, 1977), 372-397.

authors asserted that forecasting in the strategic realm had to take into account "military, economic, scientific, technical, moral, and political factors, the stability of a coalition, the relationship of world political forces, the geographic positions of the sides, the degree of vulnerability among the states and their armed forces."²⁸

In the realm of weapons development Soviet authors have paid particular attention to two crucial methodological approaches. The first prescribes the examination of any weapon within its systemic context. This approach can be seen at work in Lieutenant General I. I. Anureev's writings on weapons of missile and space defense.²⁹ Although he based his conclusions upon an analysis of US programs in these areas, the author took into account certain trends in the development of weapons technology, which would transform space from an ancillary sphere into an arena of armed conflict. Anureev also employed a systems methodology to address the second crucial component of the Soviet approach to forecasting weapons systems development: the examination of trends in the development of the natural sciences which would directly impact upon military affairs and indirectly through feedback.³⁰ In this regard he borrowed from conclusions

²⁸ V. Sokolovsky and M. Cherednichenko, "Military Strategy and Its Problems," Voennaia mysl', No. 10 (October 1968), 37-41.

²⁹ I. I. Anureev, Oruzhiie protivoraketnoi i protivokosmicheskoi oborony (Moscow: Voenizdat, 1971), 259 ff.

³⁰ I. I. Anureev, "The Correlation of Military Science with the Natural Sciences," Voennaia mysl', No. 11 (November 1972), 31-32.

drawn by other Soviet forecasters to note an accelerating trend in the sheer output volume of scientific-technical information. The difficulty confronting the military forecaster could be seen by juxtaposing two related observations. The research and development cycle of a major weapons system was 10-15 years. During that same period, based upon world statistics on the natural sciences for the three preceding decades, the volume of information would have doubled. Indeed, Anureev noted, "by 1985 it may exceed by fivefold the volume of information existing in 1965."³¹ Not surprisingly, Anureev championed mathematical simulations, systems analysis, and Delphi techniques as means of forecasting this complex process and its correlation with military science. He identified a series of questions to be addressed, including the forecasting of new areas of scientific inquiry and of new sciences themselves in the process of differentiation and integration, the probable timetable of the practical implementation of basic scientific discoveries, and inter-connections of the sciences.

Anureev also left guideposts to what he saw as the most crucial areas in future military development. In an article on military science and the natural sciences, Anureev drew attention to the link between military science and quantum mechanics, which he associated with lasers and particle beams, and stated that this connection would "lead to the development of new areas of

³¹ Ibid., 34.

tactics, operational art and strategy."³² He also directed his readers' attention to the problem of applying advanced scientific-technical means to the development of troop control.³³ It is of some interest that already in 1971 this leading authority on problems of missile and space defense had drawn attention to what he labeled "the project for an American air-space aircraft." In 1975, he went on to author a major Soviet study of the development and potential applications of multi-use space transports or "shuttles."³⁴

Anureev's startling conclusions lead to two final points regarding the application of forecasting techniques to foresight in military affairs. Given the increasing pace of scientific-technological development and the accelerating costs associated with the research and development of modern weapons systems, Soviet forecasters have pointed towards the application of mathematical simulations to the problem of abrupt changes.³⁵ At the same time, Soviet forecasters have noted the need to extend

³² Ibid., 34-35.

³³ Ibid., 36.

³⁴ Anureev, oruzhie protivoraketnoi i protivokosmicheskoi oborony, 75-76; and Rakety mnogokratnogo ispol'zovaniia (Moscow: Voenizdat, 1975). For an examination of the ramifications of such developments for the future air and space defense see: Jozef Smoter, "Operation of National Air Defense in a Possible Future War," Przegląd Wojsk Lotniczych i Obrony Powietrznej Kraju, No. 9 (September 1982), 5-12.

³⁵ Yu. V. Chuyev and Yu. B. Mikhailov, Forecasting in Military Affairs (Washington, D.C.: GPO, 1980), 180-193. The original Russian edition was published in 1975.

the range of their forecasts into the more distant future in order to accommodate the demands of the overall planning process. Drawing upon materials from the XXIV Party Congress of 1971, Konoplev pointed to the need for establishing long-range planning of up to 10-15 years in the area of the national economy. Such long-term planning, in turn, would require even longer-term forecasts relating to the direction of the development of the national economy in general and to military affairs in particular. His assertions implied a demand to aid decision-makers by pushing forward the frontiers of military forecasting to another generation of weapons beyond those currently under development, i. e., another 10-15 years, and beyond.³⁶

The scale and complexity of modern weapons systems such as air defense, missile defense, space defense, and automated systems of control have mandated the application of systems design engineering [sistemotekhnika] to their planning, design and elaboration. Based upon the application of systems analysis, mathematical modeling, and operations research, systems design engineering addresses both the characteristics of each system's major component parts and the laws governing the functioning of the entire system. Two leading Soviet specialists on systems design engineering have argued that it is particularly in this area where the art of military leadership must adapt to the

³⁶ Konoplev, Nauchnoe predvidenie v voennom dele, 57-58.

scientific-technical revolution in military affairs.³⁷

The imperative associated with this process and its implications for the further development of the Soviet Armed Forces are outlined in Lieutenant General M. M. Kir'ian's treatment of military-technological progress over the period 1917-1980. Kir'ian and his fellow authors treated the interrelationships and mutual connections between weapons development, force structure, and military art within seven distinct periods: the Civil War, NEP, socialist industrialization, on the eve of the Great Patriotic War, during the Great Patriotic War, in the postwar period, and during the era of the scientific-technical revolution in military affairs.³⁸ In his concluding remarks on the era of the scientific-technical revolution, Kir'ian left the impression that the very pace of innovation had created another on-going revolution in military affairs, far deeper in its impact and long-term potential than that associated with nuclear-rocket weapons. He observed:

The scientific-technical revolution has sharply increased the pace of material-technical equipping and rearming of the Soviet Army and Navy. In the course of the last 10-15 years two-three generations of missiles have been replaced; a significant part of the park of aircraft, submarines, surface ships, artillery, tanks, rifle and other arms, combat and special equipment have been renewed. A fifth generation of computers has been

³⁷ V. V. Druzhinin and D. S. Kontorov, Voprosy sistemotekhniki (Moscow: Voenizdat, 1976) 13-20.

³⁸ M. M. Kir'ian, (ed.), Voenno-tekhnicheskii progress i Vooruzhennye Sily SSSR (Moscow: Voenizdat, 1982).

adopted.³⁰

This observation, coupled with an appreciation of the Soviet approach to foresight and forecasting in military affairs, serves as a valid point of departure for a consideration of the short, mid-term, and long-range forecasts offered in the following pages of this document.

In addition, the appended projections are based upon certain basic and verifiable assumptions which, although they are not necessarily related to Marxist-Leninist and Soviet conceptions, will affect the direction and pace of military modernization in the USSR. First, the conflict between the socialist and capitalist systems will continue but not result in any immediate general, systemic war. It is assumed that the Western economic order will not have to face any major dislocations, which would give rise either to a general decline in its economic level or to an increase in national rivalries among the democratic-capitalist states. It is also assumed that trends in the socio-economic and political development of the Third World will accommodate both increased growth and instability within and among underdeveloped states.

Another assumption is that the Soviet political system will undergo certain reforms in keeping with more rational direction, but that these will not lead to any effective decentralization of

³⁰ Ibid., 326. For an appreciation of the one view of the impact of this new revolution by a Warsaw Pact officer see: Stanislaw Koziej, "Anticipated Directions for Change in Tactics of Ground Forces," Przegląd Wojsk Lądowych, No. 9 (September 1986), 5-9 (SASO Translation).

power. The Soviet economic system will continue a process of reconstruction for the immediate future which will permit some decentralization of authority and managerial initiative at the level of individual enterprises but which will not dismantle the existing planning apparatus or the role of the central ministries in directing economic growth. Modest gains will be made in labor productivity through various combinations of incentives and penalties for labor and management. Demographic trends will continue to reflect a gradual aging of the Soviet population and a shift in ethnic distribution towards the non-Slavic elements which will represent a larger relative share of the population. Soviet efforts in the areas of scientific and technological development will intensify in an attempt to make the transition to an "information society," and the system will be successful in both mobilizing its own resources and exploiting the advances in these fields made abroad. It is also assumed that the control mechanisms of the Soviet party-state will be equal to the task of policing the new relations forged in the process of this transition. Finally, it is assumed that the USSR will continue to see military power as both an index and a vital extension of its power on the international scene.

IMPACT OF THE DIALECTICAL PROCESS:
PERIODS OF MILITARY DEVELOPMENT

Within the context of the dialectical process, the Soviets subdivide the development of military science into distinct periods. Each of these periods is characterized by unifying themes related to the objective conditions of the period, the state of technology, or some other variable acting within the dialectic. The identification and use of distinct periods enables the Soviets to study the past, understand the present, and better predict developments in the future. The arbitrary assignment of beginning and ending dates to each period is a convenience which does not negate the basic Soviet belief that change occurs dialectically and in evolutionary fashion. They would, for example admit that trends ebb and flow, and that contradictions exist within each period, inevitably giving rise to the next period. Although each period begins as a synthesis of prior periods, each period also engenders contradictions (theses and anti-theses) which will interact to produce renewed change and eventually a new period. Hence, the dialectic's inherently dynamic approach invites systematic analysis. Periodization is an expression of the dialectic which helps produce an understanding of change.

Although the Soviets subdivide their military past into distinct periods, they do continue their study and, on occasion, they revise their definitions. For example, prior to 1960, the Soviets divided war on the Eastern Front from 1941 to 1945 into four distinct periods.¹ Further study in the late 1950s and

early 1960s prompted them to recast the war into three periods.² This is an example of how the Soviets study past trends and revise their judgments in the hope of better understanding current and future trends. They recognize that analysis of the forces governing human development is complex and never-ending. Moreover, an understanding of the complexities of past trends will, they believe, better condition them to detect the nuances of current and future change. As a result, past and contemporary Soviet analysts sometimes disagree on, or alter their structuring of the past, to align it with their understanding of current research (the benefits of retrospect).

What follows is a summary of Soviet views on those periods of development which have occurred since June 1941.

The Soviets now subdivide their Great Patriotic War (the war on the Eastern Front) into three precise periods, each defined by a distinct theme which characterized its development. The first of those periods extended from June 1941 to November 1942. The dominant theme was German maintenance of the strategic initiative in military operations. A corollary to this thesis was the technological aspect of dominance of the battlefield by German armored and air units, employing a concept commonly understood as blitzkrieg. Yet, even while that thesis dominated, the period was punctuated by periodic Soviet attempts to regain the initiative and by the slow but steady evolution of Soviet armored and anti-armor strength (anti-thesis) which, by the end of the period, was

strong enough to produce Soviet victory at Stalingrad, thus marking the beginning of a new period.

The second period of the war extended from November 1942 to December 1943. It was characterized by oscillation of the strategic initiative--first into Soviet, then into German, and finally back into Soviet hands. During this period blitzkrieg, in its classic definition of air and armor working hand in hand, was slowly balanced (negated) by Soviet development of a more progressive and all-encompassing combined arms concept which blunted German blitzkrieg at Kursk and, by the fall of 1943, emerged dominant in its own right. In the third period of war, encompassing 1944 and 1945, the strategic initiative passed totally into Soviet hands. In this period the Soviet combined arms concept (deep operations) matured into full form.

Soviet military theorists have identified at least three distinct periods in the post-war years, and some have implied the existence of possible fourth and fifth periods before lapsing into generic non-specific terminology. Virtually all agree on the existence of the first three periods.³ They describe the period from 1946-1953 (the period of Stalin) as a period whose characteristics reflected closely those of the last period of war. They define it as a period dominated by the concept of conventional operations in a classic sense. Hence, Soviet doctrine, military theory, and organizational forms evolved from the 1944-1945 period with necessary adjustments for technological change. The most important of those changes were an increased

motorization of forces, the development of heavier and faster traditional weapons (artillery, tanks and armored personnel carriers), the fielding of first generation tactical jet aircraft and the slow emergence of the long range propeller strategic bomber. The principal contradiction appearing late in the period was the growing impact of atomic weaponry and munitions which would soon alter the configuration of the battlefield and have strategic implications as well.

The second post-war period (1954-1959) was characterized by Soviet recognition of the impact of atomic battlefield weapons on potential combat operations, as well as by the emergence of long-range jet bombers capable of carrying atomic weapons to strategic depths. This period saw a wholesale reorganization of the Soviet armed forces ground force structure, the full mechanization of forces with the creation of the motorized rifle division, and the shaping of a ground force which could conduct conventional operations on an increasingly nuclear battlefield. During this period the Soviets maintained strong conventional forces [180 divisions] armed with tactical missiles, new APCs and tanks, and early model surface to air missiles.

Soviet military theorists agree that a third period commenced in 1960 with Soviet recognition that a revolution had occurred in military affairs due to the introduction of strategic nuclear weaponry that fundamentally altered the nature of war. The dominance of nuclear weapons at all levels (strategic, operational, and tactical) raised to pre-eminence the strategic

nuclear aspect of war and relegated the operational and tactical levels to relative insignificance. Hence, the Soviets created strategic rocket forces as the preeminent arm and reduced both the status of the ground forces and their numerical strength. The number of active divisions fell from 180 to 140, and the motorized rifle division was severely truncated in size. Ground forces, although now equipped with a new generation of weapons (APCs, missiles, tanks) and the first ATGMs, would simply clean up the battlefield after a nuclear exchange.

At this point most Soviet theorists lapse into generic language. A growing number, however, are now sketching out the form and nature of new periods which represent an inevitable evolution of the initial revolution in military affairs, as defined in 1960. Thus M. A. Gareyev has repudiated views held by Soviet theorists during the 1960s while N. A. Kireyev has suggested that the 1960 period ended in 1964.⁴ M. M. Kir'yan has defined three recent periods asserting:

From all that has been stated above, it is apparent that a number of stages can be provisionally singled out in the development of means of armed conflict. The first stage was related to qualitative changes affecting weapons: ammunition using conventional explosives was replaced by nuclear ammunition. Other elements of the new weapon system, including its basic delivery system and means of control, remained the same for the time being. During the second stage, the gap between nuclear ammunition and means of delivering it to targets was eliminated thanks to a qualitative leap forward in missile development, as a result of which nuclear missiles were introduced. The third stage is characterized by further development of nuclear missiles, qualitative changes in means of control, and the introduction of complex automation to the weapon system control process.⁵

Kir'yan's first period seems to describe the period 1954-1959 and the second, the period of the initial revolution in military affairs. He suggests that a third period is well underway.

Using Kir'yan's general description of the evolving influence of technology, we can postulate the existence of three distinct periods since 1960, each characterized by some unifying features and each capable of being measured against Soviet writings which have appeared in each period, some often presaging changing views.

The period of the initial revolution in military affairs, in which the Soviets adopted a single nuclear option, encompassed the span 1960 to 1970. The early years of the period saw two editions of V. D. Sokolovsky's major theoretical work Military Strategy (1962, 1963) which clearly defined the nature of the revolution.⁶ A host of other published works echoed the theme. The period was also marked by a dearth of works on operational and tactical subjects, as if to affirm Sokolovsky's priority concerns. After the removal of Khrushchev from power in 1964 (who embodied the "revolution" and single option), works began appearing which collectively represented an anti-thesis to Sokolovsky's view. P. A. Kurochkin's article on tank army operations (1965) and his book The Combined Arms Army on the Offensive (1966) expressed a renewal of Soviet interest in basic operational themes.⁷ The two volume set, Questions of Strategy and Operational Art in Soviet Military Works, 1917-1940 and Questions of Tactics in Soviet Military Works 1917-1940, with a

preface by Chief of the General Staff M. V. Zakharov, probably evidenced ground force discomfiture with the single nuclear option.⁸ By 1968, a host of specialized books appeared on operational subjects and on operational forces including works by V. D. Reznichenko, A. A. Stokov, F. D. Sverdlov, A. Kh. Babadzhanyan, I. I. Lisov and V. K. Vysotsky.⁹ All maintained the nuclear context but added the important caveat "however this does not exclude the conduct of conventional operations." Sokolovsky's third edition of Military Strategy (1968) converted his earlier direct statements about the nature of war into a question before concluding that war would be nuclear.¹⁰ In 1964, Sokolovsky himself already had published his famous operational study of the battle of Moscow.

The period 1970-1980 saw a marked intensification of Soviet study of the operational and tactical levels of war and all of those conventional forms which embody the conduct of war at those levels. While not rejecting the possibility of nuclear war, these writings sensed a nuclear balance whose very existence decreased the likelihood of nuclear conflict and increased the range of conventional possibilities. At the same time the Soviets recognized the increased lethality of weaponry and sought to structure and equip their forces to survive in that more lethal environment. This included the fielding of new tanks, self-propelled artillery, ATGMs, surface to air missiles, and other equipment in larger quantities than before and a reemphasis on the combined arms nature of forces. Soviet theorists, with

increasing intensity, examined the traditional combat functions and forces which would perform them, while stressing deep operations, rapidity of operations, and meeting engagements. Functional theoretical works included I. Kh. Bagramyan's History of Military Art (1970), A. A. Sidorenko's The Offensive (1970), A. I. Radzievsky's Penetration (1979), V. A. Matsulenko's, Operational Maskirovka (1975), S. P. Ivanov's Initial Period of War (1974), and V. E. Savkin's Basic Principals of Operational Art and Tactics (1972).¹¹ P. A. Rotmistrov (1972), I. E. Krupchenko (1973), Radzievsky (1977), and O. A. Losik (1979) thoroughly analyzed the experiences of Soviet armored forces, while K. P. Kazakov (1969), R. B. Braginsky (1977), and G. E. Peredel'sky (1977) did likewise for the artillery.¹² Radzievsky published his sequel to Kurochkin's earlier work on army operations (1977) and edited a series of works on tactics by combat example at every level of command (1974-1976).¹³ Similar works appeared on virtually every aspect of combined arms combat and combat service support, using as a base, only conventional experiences.

While in this period the Soviets stressed the lethality of modern weapons and sought to adjust their force structure to that reality, a new theme emerged which would become a central feature of the next period, namely the synthesis of technology and man in modern combat--a forerunner to full automation of command. Writing in Communist of the Armed Forces, V. M. Bondarenko argued that man and technology were naturally compatible.¹⁴ His

numerous articles culminated in 1977 with publication of the Automated Command and Control of Forces, a sophisticated blueprint for the future harnessing of automation in the service of combat forces.¹⁵

By 1980 a new period had emerged characterized by Soviet recognition that a technical revolution was in progress that altered the nature and possibilities of strategic, operational and tactical combat. The Soviets continued their emphasis on conventional combat so evident by the mid-seventies, although always in a "nuclear scared" context. A series of works appeared as mature sequels to those of the 1970s, including Gareyev's comprehensive re-nunciation of Sokolovsky's earlier view (1984), P. P. Tovstukha's work on command and control (1981), F. D. Sverdlov's studies of maneuver (1982) and forward detachments (1986), M. M. Kir'yan's study on surprise (1986), Reznichenko's new Tactics (1984), Matsulenko's study of encirclement operations (1983), and D. S. Sukhorukov's work on air assault forces (1980).¹⁶ Perhaps sounding the keynote for this period was Kir'yan's Technical Progress and the Soviet Armed Forces (1982) which clearly expounded Soviet realization that mastery of technological change was essential for survival of the armed forces, and hence the nation, in modern war.¹⁷ To underscore this belief a host of other works, including A. Ya. Vainer's Tactical Calculations, evidenced the seriousness with which the Soviets approached the subject of harnessing automation,

algorithm and calculation to exploit the time factor in modern combat.¹⁹

The Soviets are convinced that automation of command and control, integration of new equipment, and careful task organization will be the key to operational success in modern combat. They are testing organizational forms that will capitalize on these criteria for success and will likely field them in great number.

Unlike the 1970s, when the strategic realm was still largely dominated by the specter of nuclear war, in the 1980s the Soviets are conducting a thorough investigation of the nature of strategic operations in a conventional sense. Space now occupies Soviet attention as a legitimate region of strategic concern and a future adjunct to theater operations. The Soviets seek a redefinition of strategic theater operations and a new understanding of their precise nature as preconditions for Soviet work to create a theater strategic command structure and a force capable of satisfying wartime theater strategic requirements. Accompanying this work in the strategic realm are efforts to master maneuver at the operational level of war while making necessary adjustments in response to evolving US military doctrine.

The maturation of trends in this, the fifth postwar period, will likely give way to a sixth period stretching through the 1990s (see short-term changes). The contradictions which exist today and will emerge to shape the next period are identifiable.

They probably include: maturation of automated command and control; dominance of new task organized operation and tactical structures; maturation of PGMs; and the fielding of offensive and defensive space systems.

A subsequent period reaching into the first decade of the 21st Century will see space emerge as a full fledged arena for combat operations. Technological improvements will continue to increase the lethality of weapons systems (laser, anti-laser, high energy, etc.), force a redefinition of command and control relationships at all levels, and challenge the combat viability of more traditional force structures. Above all, the pace of change will require intensive study to anticipate the impact of changing technology on the nation's armed forces.

In summary, Soviet use of periods to define the nature of military development within distinct time frames is a useful tool for studying the past, understanding the present, and forecasting future change. The selection of precise dates for past periods is valid within limits. Regarding the present and future, the dates blur and one must view change in all of its ramifications. Here, trends are more important than precise times. Throughout the process of contemplating change the Soviets admit that it is as dangerous to stereotype the future as it is to stereotype the past.

ENDNOTES

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2. V. A. Semenov, Kratkii ocherk razvitiya sovetskogo operativnogo iskusstva [A short survey of the development of Soviet operational art] (Moskva: Voenizdat, 1960). Semenov departs from the previous pattern and treats 1944-45 as a single period though not designating it as such. A. A. Strokov, Istoriya voennogo iskusstva [A history of military art] (Moskva: Voenizdat, 1966) cites four periods as did virtually all works published after 1960.
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4. M. A. Gareyev, M. V. Frunze--Voennyi teoretik [M. V. Frunze--Military theoretician] (Moskva: Voenizdat, 1984); N. Kireyev, "Primenenie tankovykh podrazdelenii i chastei pri proryve oborony protivnika" [The use of tank subunits and units in penetrating an enemy defense], VIZh, No. 2 (Feb. 1982).
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1965); Voprosy taktiki v sovetskikh voennykh trudakh (1917-1940 gg) [Questions of tactics in Soviet military works (1917-1940)] (Moskva: Voenizdat, 1970)

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11. I. Kh. Bagramyan, (ed.), Istoriya voyn i voennogo iskusstva [A history of war and military art] (Moskva: Voenizdat, 1970); A. A. Sidorenko, Nastuplenie [The offensive] (Moskva: Voenizdat, 1970); A. I. Radzievsky, Proryv [Penetration] (Moskva: Voenizdat, 1979); V. A. Matsulenko, Operativnaya maskirovka [operational deception] (Moskva: Voenizdat, 1975); S. P. Ivanov, Nachal'nyi period voyny [The initial period of war] (Moskva: Voenizdat, 1974); V. E. Savkin, Osnovnye printsipy operativnogo iskusstva i taktiki [The basic principles of operational art and tactics] (Moskva: Voenizdat, 1972).

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14. For example see V. Bondarenko, "Sovetskaya nauka i ukreplenie oborony strany" [Soviet science and strengthening the defense of the nation] Kommunist vooruzhennykh sil [Communist of the armed forces], No. 17 (September 1974); V. Bondarenko, "Nauchno-tekhnicheskaya revolyutsiya: sushchnost' i perspektivy" [The scientific-technical revolution: its nature and perspectives] Kommunist vooruzhennykh sil [Communist of the armed forces], No. 9 (May 1979).

15. V. M. Bondarenko, A. F. Volkov, (ed.), Avtomatizatsiya upravleniya voiskami [Automated command and control of forces] (Moskva: Voenizdat, 1977). See also a companion study of command and control experiences: N. N. Popel', V. P. Saval'ev, P. V. Shemansky, Upravlenie voiskami v gody Velikoi Otechestvennoi voiny [Command and control of forces in the years of the Great Patriotic War] (Moskva: Voenizdat, 1974).

16. P. P. Tovstukha, R. M. Portugal'sky, Upravlenie voiskami v nastuplenii [Command and control of forces on the offensive] (Moskva: Voenizdat, 1981); F. D. Sverdlov, Takticheskii manevr [Tactical maneuver] (Moskva: Voenizdat, 1982); F. D. Sverdlov, Peredovye otryady v boyu [Forward detachments in battle] (Moskva: Voenizdat, 1986); M. M. Kir'yan, (ed.), Vnezapnost' v nastupatel'nykh operatsiyakh Velikoi Otechestvennoi voiny [Surprise in offensive operations of the Great Patriotic War] (Moskva: "Nauka", 1986); V. K. Reznichenko, Taktika [Tactics] (Moskva: Voenizdat, 1984); V. A. Matsulenko, Operatsii i boi na okruzhenie [Operations and battles of encirclement] (Moskva: Voenizdat, 1983); D. S. Sukhorukov, (ed.), Sovetskie vozdushno-desantnye [Soviet air landing forces] (Moskva: Voenizdat, 1980).

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THE FUTURE DEVELOPMENT OF THE SOVIET ARMY;

- WEAPONRY
- DOCTRINE
- ORGANIZATION

SHORT TERM (5-10 YEARS)

1. Technological Changes and Weaponry:

a. Development and fielding of ABM System:

(1) Integrating current fixed sites around Moscow into a system with improved missiles, radars and sensors, and computing technology for battle management. Appearance of first generation, ground-based directed energy weapons, as prototype for study and development.

(2) Improvement of ASAT capabilities, including space plane.

(3) Vast increase in space lift capabilities, using heavy lifters and multi-purpose, reusable space transports.

(4) Construction and manning of space station, using Saliut-Mir combination and Proton linkups. Increased time in space and beginning of limited industrial production. Work on solar-powered laser prototypes of a small and non-military type.

(5) Incremental improvements in Soviet satellites and their servicing.

b. Aircraft modernization:

(1) Application of computers to improve engine performance to get maximum range and minimum wear.

(2) Development of a new generation of fighter aircraft with emphasis upon light weight, more economical engines, longer periods to major overhaul, and the incorporation of stealth technology to frustrate modern air defense systems. Increased use of composite materials in fuselage construction. The costs of prototype development and procurement will lead to a great role for computer simulation of design and decreasing numbers of runs of combat aircraft.

(3) Development of ground-attack aircraft designed to function in a heavy air defense area and work in close cooperation with a new generation of attack helicopters. The fixed-wing and rotary-wing assets will be used to get synergistic effects in countering enemy ground targets and engaging enemy close support aircraft and helicopters.

(4) Development of a second generation VSTOL aircraft to increase reliability, improve combat capabilities, and reduce weight while increasing payload.

c. Development of cruise missiles:

(1) Improved materials to lighten airframe, computerized engine to increase fuel efficiency, more sophisticated guidance system, and maneuvering over target.

(2) Prototype development of long-range ram-jet systems with hypersonic (M 5+) capabilities.

d. Development of airmobile capacity at all levels including support of special operations and tactical maneuver at the division level: Large-scale production of Halo heavy lift helicopter with follow-on development.

e. Deployment with fleets of wing-in-ground-effect craft for coastal operations by amphibious forces, LOTS operations.

f. Improvements in conventional munitions:

(1) Artillery/air: smart weapons
precision guided weapons

(2) Air defense - new generation of fixed and mobile missiles

(3) Antitank - new generation of vehicular mounted and manpack ATGMs.

g. Development (but not deployment) of neutron weaponry

h. Strengthening of armor on tanks and APCs

i. Creation of prototypes of laser weapons (direct fire)

j. Fielding of more sophisticated battlefield sensors and C³I systems

2. Doctrine (strategic, operational, tactical techniques)

a. Continued study of nature of strategic operations with coalition forces including threat assessment component, regarding probable opponents, likely theaters of engagement, nature of conflict, character of initial operations, and risk of various types of war: general nuclear systemic, general conventional systemic, theater specific, and low intensity conflict. This net assessment would address both level of threat to USSR and socialist bloc and the probability of each type of conflict and would include:

(1) Creation of strategic headquarters and forces, and integration of mobilizing formation

(2) Sequencing of strategic operations

(3) Command and control of strategic operations (relationship of STAVKA, TVD, fronts, fleets, strategic aviation, strategic nuclear weapons, and airborne/VTA forces.)

(4) Sustainment of theater (strategic) forces

(5) The conduct and support of coalition operations to include the organization of combat command and control and sustainment and contingencies for dealing with coalition "drop outs"

b. Analysis of relationship of operations (strategic, front, army)

c. Perfection of operational maneuver techniques

(1) Techniques for the commitment of OMG's and operational forward detachments

(2) Sustainment of OMG's (logistics, maintenance with emphasis on tailored packages)

(3) Air-ground cooperation for OMG's (emphasis on dedicated air support packages)

(4) Development of heavier mobile fire support for OMG's

(5) Maturation of vertical dimension of operational maneuver to include the linkage of air mobile assault by battalions and brigades with emplacement of lift mechanized forces.

(6) Development of combined arms techniques for maximizing the synergistic effects of airmobile maneuver, operational maneuver, and maneuver of fires throughout depth of enemy defense.

(7) Consideration of the employment of airmobile brigades in defensive operations, especially as part of an aggressive defense.*

(8) Improvement of amphibious capabilities by great reliance upon surface effects vessels to increase speed and reduce risk from conventional submarine attack. Exploration of operational maneuver through the combination of surface-effects vessels with helicopter assault capabilities and transport of light APCs, self-propelled guns, and SAM/AAA systems.

*Currently the Soviets are studying the conduct of defensive operations within the context of an offensive.

(9) Greater consideration of problems of rear security and efforts to increase the ability of support troops to conduct rear security protection, while earmarking some forces for this mission.

d. Development of fluid tactical concepts

(1) Use of mobile assault groups (reinforced motorized rifle battalion configurations)

(2) Commitment and sustainment of forward detachments

(3) Formation and use of concentrated fire support

(4) Maturation of vertical dimension of tactical maneuver (air assault battalion)

(5) Development of integrated air (helicopter) and ground (artillery) fire support of tactical units

3. Force Structure

a. Maturation of force structure to deal with urbanization, reforestation, the development of denser, more effective antitank defenses, and the fielding of PGM's and increasingly effective, accurate deep strike systems, by the addition to all units of increased mechanized and supporting forces.

b. Experimentation with and fielding of tactical maneuver and operational maneuver forces (ground and air assault).

c. Basic Force Structure (approximately 210-220 active divisions and corps):

(1) Theater: Determination of what the theater commander will control to influence the battle, including fire support (missile, artillery, aviation), mobility (air, ground transport systems), logistics, strategic aviation, combined arms reserves, special troops, air assault (airborne) units

(2) Front:

(a) 2-4 combined arms armies

(b) 1-2 tank armies

(c) 1-2 separate mechanized (or combined arms) corps

(d) 2-3 sapper brigades to deal with urban and AT problems

(e) 2-3 bridging brigades (assault crossing battalions and pontoon brigades)

(f) 1 air assault corps, or

(g) 1-3 air assault brigades

(h) several material support brigades

(i) frontal aviation

(3) Combined Arms Army:

(a) 3-4 motorized rifle divisions

(b) 1-2 tank divisions

(c) 1 mechanized (combined arms) corps

(d) 1 artillery brigade

(e) 1 antitank brigade

(f) 1 sapper brigade

(g) 1 assault bridging brigade

(h) 1 air assault brigade

(i) 1 material support brigade

(j) army aviation

(4) Tank Army:

(a) 2-3 mechanized (combined arms) corps

(b) 1-2 motorized rifle divisions

(c) 1 air assault brigade

(5) Motorized Rifle Division:

(a) 3 motorized rifle regiments (1 BMP)

(b) 1 tank regiment

(c) 1 separate tank brigade

(d) Artillery units (antitank, antiair, gun)

(e) Material support battalion

(f) Beefed up helicopter squadron with larger number of attack helicopters

(6) Tank Division:

(a) 3 tank regiments (each with 1 BMP MRBN)

(b) 1 motorized rifle regiment (BMP)

(c) 1 separate tank brigade

(d) Artillery units (antitank, antiair, gun)

(e) Materiel support battalion

(f) Beefed up helicopter squadron with larger number of attack helicopters

(7) Separate Mechanized (combined arms) Corps:

(a) 2 tank brigades

(b) 2 mechanized brigades

(c) 1 separate tank brigade (Bn)

(d) Tailored antitank, antiair, SP gun

(e) Artillery units

(f) Engineer-bridging units

(g) Tailored materiel, technical, and medical support units

MID TERM (15-20 YEARS)

1. Technological Changes and Weaponry:

- a. Maturation of precision guided conventional weapons
- b. Development of first generation direct fire laser weaponry (antitank, antiaircraft)
- c. Formation of permanent industrial space stations with their own power generating capacity and ability to transmit that energy to earth via directed energy means. These to be located in higher orbits. System of laser-powered tugs to move cargoes from low orbits to higher orbits.
- d. Experimentation with anti-laser defensive systems
- e. Development of anti-laser passive defenses (armor)
- f. Experimentation with robotics in battlefield combat fire systems (tank, antitank)
- g. Evolution of smaller, more numerous armored vehicles and APCs armed with laser and precision guided weapons
- h. Experimentation with prototype electric/solar vehicles
- i. Development of radio frequency generation weapons

2. Doctrine (Strategic, Operational, Tactical Techniques):

- a. Transformation of space into a combat environment with elements in support of theater strategic operations under control of theater commander
- b. New concepts for continuous theater offensive
- c. Maturation of theater forces command and control to include coalition operations.
- d. Proliferation of operational and tactical maneuver forces

3. Force Structure:

- a. Balanced combined arms structures armed with higher tech weaponry. Smaller, more numerous combat vehicles and APCs with lighter traditional arms but more precise and effective fire systems. Tailored mobile support. Emphasis on speed and durability of operational and tactical maneuver forces. Increased air mobility and anti air means. Beginning of combat service support restructuring at all levels to reflect reduced material and increased technical support requirements due to

direct fire laser and other high technology systems. This has big targeting and weaponry systems acquisition implications.

b. Basic Force Structure:

(1) Theater: Capability of more directly controlling forces by theater commander

(2) Front:

(a) 3 combined arms armies

(b) 1-2 mechanized armies

(3) Combined Arms Army:

(a) 3-4 motorized rifle divisions

(b) 1-2 tank divisions

(c) 1 mechanized corps

(4) Mechanized Army:

(a) 3 mechanized (combined arms) corps

(b) 1-2 motorized rifle divisions

(5) Motorized Rifle Division:

(a) 3 motorized rifle regiments (BMP follow-on)

(b) 1 tank regiment

(6) Tank Division:

(a) 3 tank regiments

(b) 1 motorized rifle regiment

(c) 1 separate tank brigade

(7) Separate Mechanized (Combined Arms) Corps:

(a) 3 tank brigades

(b) 2 mechanized brigades

(8) Improved air capability at all levels (fixed and rotary wing)

LONG TERM (25-30 YEARS)

1. Technological Changes and Weaponry:

- a. Development of second generation direct fire laser weaponry (antitank, antiair)
- b. Fielding of antilaser defensive systems
- c. Evolution of passive antilaser defenses
- d. Fielding of battlefield robotics systems (fire)
- e. Experimentation with antimatter (high energy) weaponry
- f. Fielding of vehicles powered by electricity/solar systems (air cushion vehicles)
- g. Fielding of radio frequency generation weapons

2. Doctrine:

a. Space will emerge as a theater of military action with sufficient forces in theater to conduct independent strategic or joint operations using directed energy weapons against ground, air, naval (surface and submerged) and space targets. Launch vehicles will no longer be carbon-fueled but will rely upon laser-electric motors for power with a water medium. The costs of lift into space will be low, environmental damage minimal, and the payloads substantially larger. Deep space stations and even industrial activities to support them will make militarization and industrialization of space go hand-in-hand.

b. Vast scale of operations, substantial increase in lethality, and radical reduction in time both for decision cycle and execution. Collateral damage to civilian population will begin to approach nuclear dimensions. Soviets will resist the idea of cadre professional army and will seek some way of adapting citizen soldier to the new high-tech environment. This will be a revitalization of DOSAAF-type organizations to provide technical literacy in civilian economy and military literacy with the new technology. Demographic problems in recruitable population may make professionalization of high-tech arms more acceptable--extending enlistment tours to four-five years and providing for a standing NCO corps.

3. Force Structure:

a. Creation of lighter, more flexible force structure, less manpower dependent, greater reliance on smaller vehicles, and robot vehicles. Continued emphasis on speedy operations by task

organized forces. Reduction in traditional material support units. Changed technical support infrastructure.

b. Basic Force Structure:

(1) Theater:

(a) Integration of space component into structure for conducting theater operations.

(b) Stress on space- air-ground coordination between theater operating units.*

(2) Front:

(a) 3 combined arms armies

(b) 3 mechanized armies

(3) Combined Arms Army:

(a) 3 motorized rifle divisions

(b) 1 tank division

(c) 2 mechanized divisions

(4) Mechanized Army -- 3 combined arms corps

(5) Motorized Rifle Division:

(a) 3 motorized rifle regiment

(b) 1 mechanized (combined arms) regiment

(6) Tank Division:

(a) 1 tank regiment

(b) 3 mechanized (combined arms) regiment

(c) 1 separate tank brigade

* A third dimension of boundaries will evolve.

- (7) Separate Mechanized (combined arms) Corps:
 - (a) 3 mechanized (combined arms) brigades
 - (b) 2 tank brigades
- (8) Improved air-space capability at all levels

* A third dimension of boundaries will evolve.

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Soviet Military Encyclopedia

FORESIGHT (PREDVIDENIE)

Foresight, in military affairs, is the process of knowing the possible and objectively imminent changes in the military field, the determination of the outlook for the development of military theory and practice. As in any sphere of activity, foresight in military affairs can be empirical (applied) and scientific. Empirical foresight is based on "everyday" practice, on military experience. Scientific foresight in military affairs is a prediction of the origin, change, or future observation of phenomena, events, or processes, the determination of the ways and means of achieving the desired results in the military field based on the knowledge of the objective laws of war and its dialectic and materialistic analysis. The theoretical foundation and proof of the possibility of scientific foresight in military affairs rest on the tenets of Marxist-Leninist philosophy, specifically, those concerning the objectivity of the development of the world and the ability to understand this development.

Scientific foresight, as a process of knowing and transforming reality, has its own logical structure which is manifested in a definite sequence of elements: forecasting, planning, and control (command decision).

The complexity and volume of knowledge of the future dictate the necessity of using various methods of scientific foresight: the universal method (materialistic dialectics), general scientific methods (analysis and synthesis, abstraction and generalization, induction and deduction, etc.), and methods of specific sciences (in military science, the use of such methods as staff games, maneuvers, exercises, etc. is characteristic). Specific methods of coming to knowledge of the future are extrapolation, modeling, methods of expert estimation, scenarios, network planning, analysis of patent information, and others. To transform foresight from a possibility into reality, the presence and observance of a number of conditions is necessary: appropriate source information about the goals, character, time periods, and methods of coming to knowledge of the future; data concerning the object of the foresight; high degree of general and specific preparation of the subject for foresight; strict fulfillment of the requirements of the dialectic-materialistic method in an appraisal of the situation, etc.

The most important direction of foresight in military affairs is, above all, the revelation of the socio-political content, character, and essence of wars which may be unleashed by world imperialism in the future under definite conditions. The given direction is the basic one because on it depend the correctness of the determination of the goals and scale of the war, and the relationships of the masses, classes, parties and governments to

it. Lenin wrote, "From a Marxist point of view, in each individual case, for each war in particular, it is necessary to determine its political content" (Collected Works, 5th Edition. Vol. 30, p.262). It is also extremely important to anticipate the character of a possible war from the point of view of the methods and means of conducting it.

The specific forms of expressing foresight in military affairs are: military doctrine, regulations, and manuals, which reflect definite views on future war, on the character and features of armed struggle, on the forms and means of conducting it, and on decisions concerning the operations, battle, and orders of the commanders and military leaders.

Foresight in military affairs has a number of features of a structural character. For example, the large-scale characteristic of operations has generated the specificity of forecasting, planning, and command and control at the strategic and operational-tactical levels. With the implementation of foresight it is, therefore, important to observe the subordination between the goals of foresight on the strategic and operational-tactical scales.

An important specific trait of the process of scientific foresight in military affairs is the presence in it of two qualitatively different stages: the first - up until the

beginning of the war; the second - from the moment of the initiation of combat operations until their completion. In this case one must keep in mind that in the military sphere, more often than elsewhere, are manifested various types of possibilities; the situation quickly changes. Frequently the needed information is lacking, although to foresee the course and outcome of a possible war, the timely discovery of the actual plans of the aggressor with respect to the time and location of the delivery of the first strike has decisive significance. A high degree of activity in the process of foresight in the course of the war is determined by the attempts of the opposing sides to anticipate the course and outcome of events, not only for themselves, but for the enemy as well.

One of the most specific, complex, and important problems in foresight is determining the criterion of its truth, which, in the final analysis, may be only armed struggle. It is namely with the beginning of military operations that the sum total, practical, and full verification of prewar views on all aspects of military affairs, on the general theory of military art, on the principles of training and educating troops, on the organizational structure of the armed forces, etc., is implemented. In peace time the role of the criterion of the truth of foresight in military affairs is played by various exercises and maneuvers, in the course of which the treatment of theoretical problems is implemented and practical habits for

conducting military operations are developed in personnel and commanders, as organizers and leaders of combat.

FORECASTING (PROGNOZIROVANIE)

Forecasting (prognozirovanie) in military affairs (from the Greek - prognosis - foretelling, knowledge in advance) is the determination of future probabilities of data on possible directions and tendencies in the development of the armed forces, military equipment, and military art, both in one's own country (coalition of countries) and in that of a probable or actual enemy, and in the course and outcome of armed struggle in a war on the whole. As distinct from foresight (predvidenie), forecasting, as an integral part of foresight, resolves narrower problems of a military-theoretical and practical character. The term "forecasting" received wide dissemination in the 50's when there occurred great shifts in the development of mathematics, cybernetics, and computer technology, which made it possible to more precisely model future phenomena in the development of the

army, and innovations in means and forms of combat operations and in troop leadership.

The methodology of forecasting in the armed forces of the Soviet Union and in the armies of other socialist countries is Marxism-Leninism, which gives a genuinely scientific and ideological foundation for determining the overall prospects for the development of military affairs and for the modeling of this process.

The basic spheres of forecasting in military affairs are strategic, operational, tactical, military-economic, and military-technical, which are found mutually connected and mutually conditioned.

On the basis of military-strategic forecasting are determined the possible character of a future war, the degree and means of use of nuclear weapons and other means of mass destruction in it, the features of a war using conventional weapons of destruction and the possibility of its escalating into a nuclear war, the character of local wars, the quantitative composition and qualitative condition of the armed forces of a probable enemy, and variants (plans) for their strategic use at the beginning and in the course of a war. As dependent on the obtained data from the forecast, requirements and recommendations for the further development of the armed forces; creation of new armaments,

military equipment, and transport; stockpiling of reserves of material means necessary for the conduct of war; and preparation of the armed forces and the country as a whole are worked out.

With the help of operational and tactical forecasting, the character of operations and combat and means of conducting it using new, promising means of armed struggle are revealed; possible consequences of the massive use of nuclear weapons and other weapons of mass destruction are determined; measures for counteracting enemy use of nuclear weapons and other weapons of mass destruction, for protecting troops and rear targets, and for reestablishing their combat capabilities are worked out. Forecasting of probable enemy activity in the course of a war discloses the possible plan for using troops, nuclear weapons, and other weapons of mass destruction.

As dependent on this, a plan for forthcoming operations is worked out; appropriate groupings of troops, forces, and means for its implementation, and the necessary reserves of material and technical means are created; command and control of troops is organized; other measures are carried out. In the course of the combat operations are determined changes in the situation as a result of the use of nuclear weapons and troop operations, formation of zones of radioactive contamination, flood areas with the destruction of hydrotechnical structures; also determined are measures for the removal of troops to safe areas. Water

conditions, the ice situation in reservoirs, the condition of seas, oceans, and straits, the weather with respect to the choice of time for the beginning and conduct of the actual combat operations, rocket launches, plane and helicopter flights, conduct of artillery fire, etc. are forecasted.

Military-economic forecasting makes it possible to reveal the further development of the military-economic capabilities of one's own country and that of a probable enemy with respect to supplying the armed forces with everything necessary to conduct military operations in the future; it also gives to one's state and military leadership data on the possible efficient qualitative and quantitative composition of the armed forces, its branches and types of troops, on the more expedient organization of operational formations (ob"edinenie and soedinenie) and units; it makes it possible to determine the necessary budget allocations and to judge the expenditure of economic resources in peace time and at the beginning of the war.

Military-technical forecasting provides data on the possible tactical-technical characteristic models of weapons and military equipment, prospects for their further development and improvement, and the appearance of new means of armed struggle.

Forecasting usually divided into short-term, which determines prospects of development of phenomena over a short period of

time, up to 5 years; mid-term, which covers a period of 5-10 years; and long-term, which covers a period greater than 10 years. Short-term forecasts are the most detailed and precise. Long-term forecasts give only general directions in the development of military affairs or its integral parts, a general representation of a possible war. Forecasting in military affairs is practiced by the general staffs and staffs of the branches of the armed forces, the main and central directorates of the ministries of defense, scientific-technical and military educational institutions, special troop formations (soedinenie) or units, and other military organizations. Mathematical, heuristic, and composite methods of investigation are used in forecasting.

Mathematical methods of forecasting are conventionally divided into 2 groups: mathematical modeling and extrapolation (statistical method). The method of mathematical modeling consists of the transfer of generalized data obtained as a result of modeling to a future situation. This method is connected with determining the quantitative characteristics of the processes of armed struggle with the help of mathematical modeling of the battle and the operation. It gives good results in the forecasting of the characteristics of models of weapons. Various data which characterizes the battle and the operation are subjected to mathematical treatment, as a result of which their quantitative dependency is established. Then mathematical models

are built, and the values of the characteristics of interest of the processes being investigated are computed. Statistical forecasting consists of the treatment by statistical methods of available data on the process being forecast, obtaining dependencies which connect these data with time, and computation of the expected (probable) characteristics. Mathematical methods make it possible to reach high level of efficiency with the help of modern computers, and excludes, or significantly limits, the subjective factor. However, even with their use there is still a possibility of errors connected with an incorrect choice of mathematical model, a change in the character of the process in comparison with the preliminary character, the presence of indeterminate factors ("interference"), etc. Such qualities of the commander (military leader) as experience and intuition do not find adequate manifestation here either. Therefore, under modern conditions other methods of forecasting, particularly the heuristic method and the method of expert estimation are also not excluded. These make it possible to attract to forecasting a large collective of specialists (experts) who base their conclusions primarily on experience and intuition, which makes it possible to draw more correct conclusions from the data received by mathematical methods. Logical analysis is widely used to bring to light and liquidate contradictions which arise in the process of forecasting, making it possible to reduce the errors in forecasting. Especially large is the role of logical analysis in the forecasting of spasmodic processes. With the goal of

receiving the most trustworthy data on probability processes of the development of military affairs, one should use composite methods of forecasting so that they mutually supplement each other.

For forecasting in military affairs, data of forecasts obtained by corresponding state organs and enterprises are used. As distinct from forecasting in many natural sciences, where it has the goal of adapting activities to the expected condition, in military affairs its significance is determined by the degree of use of the obtained data for changing the situation. In this case, the complexity of forecasting in military affairs consists of the fact that it is necessary to estimate the capabilities and character of two opposing sides who keep their plans and calculations highly secret. All data must be trustworthy and obtained in the combat situation in the shortest possible time with the goal of making a timely and correct decision on the operation of one's own armed forces, corresponding to the unfolding situation.

The inability to correctly evaluate all the factors which influence the change in situation can lead to irreversible mistakes. Thus, in the second half of November, 1941, the strategic situation on the Moscow axis was not unfolding in favor of the Soviet troops. This situation namely led the German-Fascist command to conclusions concerning the possibility of

seizing Moscow in the shortest period of time. As is known, this forecast turned out to be erroneous. The fascist military leadership was not able to objectively evaluate the situation in its entirety. In particular, they ignored data on the concentration of reserves of Soviet troops in the Moscow environs, the high moral spirit of the Soviet people and military personnel, the growing military potential of the Soviet country, and the increased military expertise of its fighting men. The stavka (HQ) of the Soviet high command made a different forecast. Taking into consideration all factors characterizing the capabilities of the Soviet state, people, and army, and having correctly determined the noted tendencies of the damping of the enemy offensive, the stavka made the correct decision: after wearing out the advancing enemy in defensive battles, to cross over to a counterattack by introducing large reserves into battle, to rout the German-Fascist troops, and to repel them from Moscow. A thorough consideration of all factors influencing the situation and capable of changing it by the summer of 1943 made it possible for the stavka to correctly determine the axis of the main strike of the German-Fascist troops and to take measures in advance to rout the large enemy groupings on the Kursk axis. And, on the contrary, the biased evaluation of the possible development of the military-political situation by western countries on the eve of the second world war led to the fact that the war began and was conducted not as the imperialists wished.

In modern war, forecasting has become significantly complex: the volume of data necessary for forecasting has sharply risen, the content of the data has changed, enemy capabilities for rapid maneuver and conducting various camouflage measures with the goal of hiding the preparation for an operation and of deception with respect to their plans have increased. Together with this, the exceptional power of weapons of mass destruction and the introduction of other means of armed struggle have increased the necessity of military forecasting. It has attained a rather large role in connection with the acceleration of the tempo of development of weapons and military equipment, and with the growth of expenditures for their production. Considering the growing danger of the pernicious influence of new powerful means of struggle, and considering the rising cost, under modern conditions the necessity of scientific forecasting has increased with regularity. For such forecasting in the 60's and 70's, special enterprises were created in developed countries: corporations, commissions, institutes, societies, centers. For the forecasting of a situation unfolding in operations, numerous means for computation, making it possible in a short time to "play through" variants of decisions with consideration of possible changes in the situation, so as to make the most advantageous (optimal) decision from among them, were created. However, in spite of the introduction of the most modern computer technology, the role of man in forecasting not only has not been reduced, but it has increased. Heuristic forecasting remains a

product of human creation, while mathematical forecasting suggests the activity of man as an element necessary for the scientific preparation and analysis of the data. In the forecasting of processes of combat operations, a large quantity of people participate; they are directed by a commander, whose decision is the basis for using all forces and means taking part in the battle and operation. All this represents exceptionally high demands on the commanders at all levels; it demands of them thorough professional knowledge, the ability to quickly grasp and analyze the sharply changing situation, and to draw the correct conclusions from it. In the solution of these problems they must capably use the varied computer technology available for the most accurate determination of possible changes in the situation and of success from the decisions made.

(ORENSTEIN)

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Anticipated Directions For Change In Tactics Of Ground Troops
Col Stanislaw Koziej

The dynamic growth in the means of combat places before military science increasingly complex tasks concerning the development out of new principles and methods for conducting combat operations. The tempo of undertaking and realizing these tasks must be increasingly more rapid. If this used to mean the ability to equip troops with weapons, now it depends upon the frequency of the appearance of prototypes of new weapons systems, and even on the tempo of coming up with new design concepts or daring scientific hypotheses concerning possibilities in the future of combat means.

There are a great number of proposals, and even more theoretical hypotheses than proposals. Therefore, many more people nowadays than previously must concern themselves with the future of military art. Research teams and staffs have almost completely replaced individual work, typical in former times, because problems in the field of tactics or operational art have, for the most part, exceeded the capabilities of the individual. A full expression of the type of problems there can be is given by a thorough examination of the exceptionally interesting book by A. Karkoszka and Z. Broniarek, Source Of The Arms Spiral. This

type of information is also encountered in many other publications. .

Various prospective weapons systems are being developed and gradually introduced in all the branches of the armed forces. The air force and navy are modernized; strategic, operational, and tactical nuclear weapons are being developed; forces for space are taking shape. In the race for modernization, the ground forces, of course, do not lag behind. We will examine the most fundamental tendencies in the development of means of combat for these troops, so as to sketch out on this basis the principal directions for changes in ground forces tactics which one can expect by the end of this century.

Nuclear weapons are systematically being developed and improved. Their quantity is increasing. For example, in the last decade the number of tactical nuclear means grew twofold. Various modifications of nuclear weapons with selective operations are being developed. The process of miniaturization of nuclear charges and equipping them at the tactical level continues.

An exceptionally great deal of attention is being devoted lately to the improvement of conventional weapons, noting significant achievements in this field. These are leading to the gradual obliteration of the differences between the efficiency of nuclear means and that of conventional means. This is mainly the result

of a radical increase in the accuracy and range of means of striking and the appearance of a new category of weapon, i.e., the precision weapon. Obviously, up to now, the probability of hitting the target depended on the distance of the shooting: the greater the distance, the less the ability to strike. Precision weapons strike out this dependence, thanks to the guidance of the missiles to the target. Their accuracy is not dependent on distance, meteorological conditions, or time of day. This is, without doubt, a revolutionary transformation in means of combat, which must significantly influence the principles and methods of its conduct.

Armored units still continue to be modernized in the search for improved solutions in the spheres of fire, resistance, and movement. Fire strength is increased most of all by an improvement both in the quality of its control system and in ammunition. The possibility of improving the indicators of resistance against enemy fire is seen mainly in a reduction of dimensions and an increase in mobility.

The fundamental essence of modern combat of ground forces is combat against armored means. In this, antitank guided missiles play a major role. Among them, particular attention is paid to the newest, third generation missiles. These missiles are completely automatically guided to the target, with self-guiding heads of the semi-active and, especially, passive types ("fire

and forget" type). In the group of weapons designated for fighting against armored means, the development of systems of remote striking of group targets directly (large-head missiles with a great number of missiles directed against individual targets) or indirectly (erratic mining) should be particularly emphasized. The equipping of field artillery (conducting indirect fire) with missiles that are self-guiding to the target in the final phase of the flight, and which are also capable of accurately striking individual tanks in motion is having a revolutionary influence on the capabilities and organization of fighting against tanks.

Among all the means of combat for the ground troops, in the last quarter century the helicopter has had the greatest combat success. Modern helicopters are capable of carrying out a wide variety of combat missions. In addition to tanks and BMPs, helicopters are becoming the third basic means of combined arms combat. They are armed with various rocket, artillery, and gun weapons systems, which makes it possible for them to effectively strike all targets on the modern battlefield. Being equipped with more and more improved electronic instruments transforms them into means capable of operating under various meteorological conditions and at various times of day. The quantitative and qualitative development of helicopters continues. New air-assault (desantowo-szturmowy) helicopters, which are universal air combat vehicles, are appearing. They provide a basis for the

establishment of new types of formations (zwiazek) and subunits (oddzial) of troops in the ground forces, i.e., air-storm troops (wojska powietrznoszturmowe) and air-mechanized (powietrznozmehanizowane) troops (or, simply, helicopter troops). In connection with this one can anticipate that this process will, as a result, lead to broader qualitative changes and a transformation of ground troops into ground-air troops.

Electronic means

An exceptional role in the development of weapons and the transformations in the character of the battlefield is being played by various electronic means. The "electronization" of troops has encompassed all levels of the organizational structure, including the lowest tactical levels and the basic types of weapons and other military equipment. A base is being created for the automation of many processes of armed combat. Prerequisites for this exist, for example, in remote controlled reconnaissance systems, in automated systems of command and control, and in the so-called recon-strike systems and recon-fire systems, which combine the functions of reconnaissance, directing fire, and striking. The capabilities of satellite means for providing communications at all levels of command and control, even at the lowest tactical level, should not be forgotten. All this creates conditions for visualizing the so-called automated or electronic battlefield of the future.

Laser weapons will be a very efficient means of combat in the future. For 10 years successful tests for fighting against air targets, including rapidly flying targets, with the help of lasers have been conducted. Work on the use of laser weapons in space is significantly advanced. One can foresee that in the future such weapons will also be found with the ground forces.

The most important developmental tendencies of means of combat give expression to the character and requirement of inevitable changes in the tactics of ground forces, in the face of the approaching 21st century. Which of the most essential directions of these changes stand out? This is a question not only of theoretical and cognitive dimensions, since the answer to it has, and should have, practical value as well, expressed in recommendations as to which transformations in the tactics of ground forces are necessary to prepare for in the training process, especially, in the first order, in military institutes, and in the training of cadres.

Influence of technology

Among the tendencies of changes in tactics, attention should be paid to those which are associated with the development and dissemination of precision weapons, and with increasing the range, force, and accuracy of striking. These changes are

particularly apparent in the tactics of the defensive battle. One can even pose the thesis that they are leading to a complete reevaluation of the very essence of the defense on a future battlefield. In the classical Clausewitzian framework, the essence of defense is "expectation of the blow." The defender chooses a location, the attacker imposes the time for beginning the battle. Future long-range precision means of striking ruin this design. Now the defender, being able to reach the enemy at distant pre-battle positions, on march routes, and in assembly regions, does not have to only wait for the blow, i.e., for the strike. He himself can make the decision about the beginning of the battle. The choice of the time of the encounter has ceased to be an exclusive attribute of the attacker. The use by both opposing sides of powerful strike means can, in a short period of time, lead to sudden changes in the situation, a reevaluation of the correlation of forces and the capabilities of the sides, and, as a result, their intentions. The weaker can suddenly become the stronger. Therefore, the defender is not fated to a prolonged stay in the role of the weaker side; he can and should be prepared for a change in the conditions and type of operations being conducted, for crossing over from defender to attacker in case such a possibility arises.

Directly connected with this is the growth of the significance of the problem of crossing over to the attack from a position of direct contact with the enemy. This can be a more frequent

occurrence than it formerly was, precisely because, among other things, the possibility of crossing over from the defense to the offense will appear more frequently. The endeavor to conduct the battle "in close order", to bring the forces close to the enemy, also has a substantial influence on this; this complicates for him the conditions for using long-range means of striking in that it adds the additional necessity of selecting targets from among those located near to himself and those located in areas where one's own troops and enemy troops are completely mixed. For the enemy, such a situational complication (the occupation of a definite position) of the use of strike means can, in the future, have greater and greater significance. It is also necessary to look in this light at the growth of interest in crossing over to the offensive after the replacement of troops which are in direct contact with the enemy.

Weapons of decision

These weapons with great range are definitely forcing a greater dispersal of troops which are located in the depth. Regions of concentration, assembly regions for the offensive, etc. will have to be larger. Reserves, second echelons, and forces approaching from the rear will have to be shifted and arranged in smaller formations over greater area so as to make of themselves the greatest possible number of potential targets.

An essential characteristic of long-range weapons systems is the fact that they can be distributed over great depths. In connection with this, more and more means of combat which will decide its course and results will be located in the depth of the troop formation. It should be emphasized that, in addition to the various strike means, there are also airports, landing fields, command and control positions, communication centers, radioelectronic means and forces, rear targets, etc. This results in the growth of the significance of the principle of simultaneous operation on the entire depth of the enemy formation.

One can anticipate that, in addition to one's own strike means, various operations on the rear of the enemy, in particular the organized elements of the combat formation such as separate subunits, raid subunits and groups, desant-assault groups, desant helicopters, special subunits, and envelopment subunits, will play a very large role. Raid operations should be an efficient method of carrying out combat missions by higher elements of the formation. Raids which reach the most important targets distributed in the depth of the enemy formation contribute to the weakening of that formation, the breakdown of its structure, and the negation of the possibility of realizing operations which had been planned earlier.

The broadening of the scale of various combat operations in the rear and within the enemy formation results in the fact that one can speak about the tendency for change in the former classical concept of defeating the enemy by a method which can be called a crushing of his formation by blows from without (breakthrough, encirclement, blockade) to a concept relying on the splitting of the enemy formation from within (penetration, raids, desants, diversion, etc.). Such a procedure can be disseminated especially under conditions of the air-land battlefield.

The formation of the theory and practice of air-land combat operations must be acknowledged as the most significant developmental tendency in modern tactics of ground forces. One can find the prototypes of such operations in the operational-strategic concepts of the interbellum period and in the operational practice of World War II. Air-land operations in the tactical dimension appeared principally only from the moment of the generalization in the forces of helicopters and their combat use in local wars after 1945. There is no doubt that under the influence of the rapid development of helicopters, air-land tactical operations will become the dominating procedure at the threshold of the 21st century. Resulting from this is the necessity to speed up research work on the theory of such operations so that future requirements of the practice do not catch military science unawares, and so that a theoretical basis for achieving a breakthrough in awareness in the professional

cadres of the ground forces, especially the cadres of the mechanized troops and tank troops, is created. The matter concerns a particular change in the attitude of the tankman and the infantryman, and his transformation into an officer who will be capable of perceiving and evaluating the battlefield not only from the height of a turret of a tank or a BMP, but also, and perhaps most of all, from the height of a helicopter flight. This certainly will not be an easy process, because it is difficult to break a habit, attested by the resistance with which at one time the cavalrymen transferred to tanks. Today's generation of ground forces cadres are faced with the necessity of overcoming a similar barrier, perhaps more in the character of a psychological one than an intellectual one.

The quantitative and qualitative development of helicopters and precision weapons significantly increases the role of the factor of mobility in tactical operations. One can anticipate that on the future battlefield, the function of mobility will broaden. It will not only manifest itself in the form of maneuver, but also as a component of the strike. In an ever increasing sphere mobility will be the basis of all kinds of troop operations, including their "sojourn" on the battlefield (regeneration of combat capability, rest, preparation for subsequent missions, etc.). The troops will have to change the regions of their stay more frequently than formerly so as to make reconnaissance and observation of targets difficult for the enemy; they will have to

arrange themselves in a more dispersed fashion so as to reduce the efficiency of enemy strike means; they will have to rapidly assemble in the selected area so as to create a numerical superiority on the decisive axes at the crucial time. In a word, a particular dynamism of the combat essence of troop formations on the future battlefield will be necessary. And this means that they will be in motion nearly the whole time. This will precisely determine the tremendous growth in the significance of mobility.

The next direction of changes in tactics is connected with the growth in the role of the factor of information as one of the elementary components of armed combat.

The development, electronization, and automation of systems for reconnaissance, directing fire, command and control, communications, and radioelectronic warfare result in the fact that managing information will not only assist strike means, but in some cases will even independently prejudge the results of an engagement, sometimes even during the preparation phase.

The struggle in the sphere of information ultimately boils down to the effect on the command and control system of the enemy (chiefly through his reconnaissance system). Winning this fight means the ability to steer the enemy in the direction of one's own plans and intentions. In the face of the growth in the

effectiveness of strike means, the ability to steer the enemy, to impose one's will upon him, and to completely deceive him will have increasingly substantial significance for the course and results of combat operations. Therefore, one must include this problem among the most important for tactical research and training of ground forces.

In summation, it is worth emphasizing that the changes in the tactics of ground forces anticipated within the perspective of the approaching 21st century will ensue under the influence of the development and introduction of precision weapons and helicopters on an increasingly broader scale, as well as the rapid tempo of electronization and automation of the basic processes of armed combat. One can identify the following as the basic directions of transformations in the tactics of ground forces:

1. transformation of the traditional land operations into air-land operations;
2. broadening of the role of mobility in all troop operations;
3. development and dissemination of the practice of combat operations within enemy formations, especially raid operations;
4. the initiation of battle at increasingly greater distances;
5. the growth of the significance of the "information

struggle" having as its goal the steering of the enemy in the direction of one's own plans and intentions.

It is precisely these problems which should, above all, capture the scientific-research and training attention of the ground troops.

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